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THIRD MONTHLY NARRATIVE REPORT

15 October 1965

REFERENCE

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Job No. 645

REPORTING INTERVAL

10 September - 10 October 1965

OBJECTIVES

The objectives of this program are to define the operational objectives for automatic screening of photographic intelligence data; to study, test and evaluate the techniques applicable to the problem; and to generate a design for an operational prototype system. Extensive experimentation on existing scanning and processing equipment, coupled with computer simulations of recognition systems, will be used to test the feasibility of several schemes. The final system design will be based upon the results of the techniques study and upon the operational objectives defined in the program.

STATUS OF ACTIVITIES AND ACCOMPLISHMENTS

During the month, the definition of the operations required of a device for automatic screening of photographic intelligence was continued. Because of differing time and level-of detail requirements, a module of electro-optic device is envisioned.

As the complexity of the mission increases, additional modules will be added. For example, the screening module could consist of a film reading station, decision logic, and electronic display. Only frames on which there is a high probability that a target will appear would be displayed to the interpreter. Of course, an override would be available to enable the operator to inspect the areas of known interest.

Modifications to the prenormalizing system electronics to make it independent of CONFLEX have almost been completed. As an additional effort, an adjustable film holder is being incorporated into the scanner to insure precision in our tests. Research would begin with the complete system during the last week in October.

Tests on tank and non-tank imagery were conducted with the scanner and other prenormalization (i.e., time domain filters) electronics. An algorithm based on the MADALINE was used to make the separation of the two classes. The results were encouraging but difficult to interpret because of the poor quality of the imagery and the size of the target.

As the research tools become available, a series of experiments will be conducted with the following imagery: 1. Basic shapes of equal area. 2. Spoked shapes. 3. Basic target outlines. 4. Actual targets against opaque background. 5. Actual targets with background. All of the imagery at is being collected and cataloged, but there is a need for additional imagery.

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Work has begun of the design and fabrication of an electronic analog of the integral scanner to make it suitable for inclusion in an all-electronic system. The equipment for scanning in one direction has been fabricated, and circuitry to give it a rotational capability is being designed. Research has continued on improvements for the existing scanner. If a good electronic analog can be designed, the work on mechanical improvements will be discontinued.

DIFFICULTIES ENCOUNTERED

Now that we have the capability to conduct experiments, the lack of exemplary imagery limits the program.

TECHNICAL AGREEMENTS MADE

None

PROGRAM FOR THE NEXT INTERVAL

During the next reporting period, emphasis will be placed on experimentation using the [] scanner with both prenormalizer electronics. With the emphasis on experiments, the effort in the other task areas will be reduced.

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SPECIAL REPORT - []

Within one week of the last report, the memory of the CONFLEX malfunctioned again. This will cause a further delay in the [] report.

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